

Binderless Particleboard Resistance to Termite Attack

S. Suhasman, Y. S. Hadi, M. Y. Massijaya, A. Santoso

The authors are, respectively, Associate Professor, Forest Products Utilization and Processing Lab., Hasanuddin Univ., Makassar, Indonesia (suhasman@yahoo.com); Professor and Professor, Biocomposite Lab., Bogor Agric. Univ., Bogor, Indonesia (yshadi@indo.net.id [corresponding author], mymassijaya@yahoo.co.id); and Biocomposites Scientist, Forest Products Research Inst., Bogor, Indonesia (asanto10@yahoo.com). This paper was received for publication in March 2012. Article no. 12-00044.

Abstract

Three particleboard types, including urea-formaldehyde (UF), melamine-formaldehyde (MF), and binderless, were made from three wood species, sengon (*Paraserianthes falcataria*), gmelina (*Gmelina arborea*), and mindi (*Melia azedarach*). Wood particle sizes of 10 to 20 mesh were manufactured for the 30 by 30 by 0.7-cm (length by width by thickness) boards, with 0.75 g/cm³ as the density target. Binderless particleboards were made through particle activation with hydrogen peroxide and ferrous sulfate as the catalyst, and the boards were hot pressed at 180°C for 12 minutes. For the purpose of comparison, conventional particleboards were made with UF and MF, with the resin level at 10 percent and the boards hot pressed at 120°C for 7 minutes. All particleboards were conditioned for 8 months prior to testing against the subterranean termite (*Coptotermes curvignathus* Holmgren) in laboratory and field tests, and against the dry wood termite (*Cryptotermes cynocephalus* Light) in laboratory tests. Results showed that wood species affected particleboard resistance in both of the subterranean termite tests and that the type of particleboard affected board resistance in field tests. Particleboard from sengon wood had the lowest resistance in both tests, followed by from gmelina and mindi woods, and particleboards with UF and MF resins had better resistance than binderless particleboard in field tests. Particleboard type and wood species did not affect board resistance to dry wood termite attack.